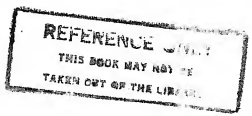
DEPARTMENT OF THE ENVIRONMENT
CENTRAL DIRECTORATE OF ENVIRONMENTAL PROTECTION

CONTROLLING POLLUTION: PRINCIPLES AND PROSPECTS

The Government's response to the Tenth Report of the Royal Commission on Environmental Pollution



Pollution Paper No. 22
(1984)

LONDON
HER MAJESTY'S STATIONERY OFFICE

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FOREWORD

1984 has been a particularly busy year for all concerned with the protection of the environment. Major international conferences have been held on matters as diverse as transboundary air pollution and the health of the North Sea. We are now looking forward to a meeting of Environment Ministers which I have called in response to an invitation from the London Economic Summit that we should examine areas for continued co-operation. There is increasing awareness of the international dimension of many environmental problems; and the United Kingdom is deeply committed to helping to identify the international solutions they demand.

But we must also make sure that our own house is in order. The Royal Commission on Environmental Pollution's wide-ranging Tenth Report, published earlier this year, has been a very effective reminder that despite the substantial improvement in the quality of our environment over the past three or four decades a wide range of issues still require attention. This response sets out how we intend to tackle them – and shows that there has been no weakening in our commitment to environmental protection.

I am very grateful to the Royal Commission for all the work which went into the production of its Tenth Report, and wish it well for its next, equally daunting, study on the question of pollution by wastes, including contaminated land.

PATRICK JENKIN
Secretary of State for the Environment

December 1984

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i. Co-ordinated action to deal with environmental pollution in all its forms began in Britain in the early 1970s, although measures to deal with particular forms of pollution have a much longer history. The Government of the day surveyed the scene in 1970[1], and the Royal Commission itself examined all the main issues in its First Report[2]. Another general statement of philosophy was published as the Government's report to the 1972 United Nations Conference on the Human Environment[3].

ii. It is timely to review, once again, the state of the British environment and the success of our policies. The Government are grateful to the Royal Commission for its assessment in its Tenth Report. This appeared at a time when many of the objectives set down a decade ago – and some not recognised even then – have been achieved. Clean air is now a fact in our city centres. Detergent foam has gone from our rivers. Unleaded petrol is to be introduced. Motor vehicle emissions have been curbed. National emissions of sulphur dioxide have been reduced by nearly 40 per cent since 1970. New measures have grappled with irresponsible tipping of toxic wastes. Controls over marine pollution by dumping and by discharges from land are being extended. These welcome advances have been highlighted in a recent Government booklet[4], and in a more substantial form in the Government's annual Digest of Environmental Protection and Water Statistics[5], which is itself a pioneering document equalled in few other western countries.

iii. But these advances have themselves drawn attention to new needs. As we have dealt with acute pollution in 'hot spots' such as urban centres, so we have revealed potential problems of long-term exposure to lower concentrations, sometimes far away from the sources of emission. And our concepts have changed. Our previous pre-occupation with sectors of pollution – air, water or land – has been replaced by a concern to ensure that those substances which must go into the environment do so where they will do least harm in relation to the costs involved: the concept of 'best practicable environmental option' defined by the Royal Commission in its Fifth Report[6]. Similarly, concern with curing pollution has been coupled with a quest for prevention, by substituting cleaner industrial processes, by screening and controlling new chemicals, and by treating and recycling more and more wastes within the factory fence.

1. Protection of the Environment. The Fight against Pollution. Cmnd 4373; HMSO, 1970.
2. Royal Commission on Environmental Pollution. First Report. Cmnd 4585; HMSO, 1971.
3. The Human Environment: The British View. HMSO, 1972.
4. Environmental Protection: Problems, Progress, Practice, Principles and Prospects. Department of the Environment, 1984.
5. Digest of Environmental Protection and Water Statistics. Nos 1–6; HMSO, 1978–84.
6. Royal Commission on Environmental Pollution. Air Pollution Control: An Integrated Approach. Cmnd 6371; HMSO, 1976.

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iv. The Government accept the broad analysis, and many of the detailed points, in the Royal Commission's Tenth Report. Part I of this response discusses the general principles of pollution control in the United Kingdom, using this opportunity to state again the Government's philosophy. Part II deals with the Royal Commission's detailed recommendations which, for convenience, have been reproduced opposite the Government's response. The Government welcome the prospect of continuing analysis – and constructive criticism – from the Royal Commission, just as we welcome the growing public debate on environmental issues.

v. As the Royal Commission recognises, a clear and well-informed public perception of these issues is crucial. Accurate information about the state of our environment, and reliable scientific analysis of the way environmental systems work, is essential for informed judgement. Risks should be measured as objectively as possible – with uncertainties made equally explicit. But the Government also accept that people's feelings may not coincide with the scientific estimate of the risk. Environmental policy must take public feelings into account. Where they are the result of misconception, only information – which is accepted as unbiased and derived from open processes – is likely to remove them. Where they are the considered results of deeply-held values, they have to be taken very seriously in the political process. These considerations lie at the heart of the present environmental debate. They guide our approach, stated in this response, to research, policy analysis, confidentiality, and presentation.

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PART I

GENERAL PRINCIPLES OF POLLUTION CONTROL

1. The Government are firmly committed to improving the quality of our environment. Although much has already been done, we shall do more. We have announced our aim of reducing national emissions of sulphur and nitrogen oxides by 30 per cent from 1980 levels by the end of the 1990s. We have launched a major scheme to clean up the Mersey, our largest estuary still suffering from severe pollution. We are at the forefront of the move to take lead out of petrol throughout Europe. But in taking actions such as these we cannot ignore costs, or escape the need to spend money wisely.

2. Our approach to the improvement of environmental quality embodies the following principles:

the need to base decisions on the best available scientific foundation;

the need to set realistic goals for environmental quality;

the need to take technical feasibility and cost-effectiveness into account in reaching decisions;

the need to recognise interactions between different sectors of the environment, and to dispose of wastes – which industrial society inevitably produces – where they will do least harm;

the need to recognise the international dimension to many environmental problems, and to take international remedies accordingly;

the need to inform the public about the state of the environment and to take public feelings into account in developing environmental policy.

These are discussed in more detail below.

The Scientific Foundation

3. Pollution is controlled in order to prevent damage or reduce risk to human health, livestock, crops, ecological systems, historic monuments and the countryside. Because pollution is related to the amount of a pollutant to which these 'targets' are exposed, and to the duration of exposure, in theory it should be possible to establish strict scientific criteria on which to base controls. In practice this is more difficult because these relationships are not always simple: secondary effects may occur and often the pollutants of interest are part of a complex mixture. Thus the kind of situation which can arise is that the components of such a mixture interact with one another and with external factors such as climate. The effect may be acute or chronic and will vary with the age and robustness of individuals in the 'target' population; over time a population may adapt and become resistant to the stress generated by a pollutant.

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4. In setting standards pollution control authorities must take account of the best evidence of the effects of a pollutant, but they must apply their judgement in context and they must allow for uncertainty. Continuing scientific research is needed in order to improve understanding of the link between exposure and effect, and so enable us to judge the likely effectiveness of particular controls. Monitoring is an essential tool in ensuring that controls are effective. We monitor to ensure that standards are being met; to ensure that these standards are effective in protecting the environment; and to record trends and pick up effects which become apparent only after a prolonged period of exposure to low levels of a pollutant.

Realistic Environmental Goals

5. However much we might wish to do so, we cannot turn the clock back and restore the environment to its pre-industrial state. Environmental protection means getting rid of unacceptable damage wherever practicable and reducing risk. It does not mean that we never discharge the wastes of our society into the environment nor should it ever become a quest for the unattainable – zero risk. Our aim must be to set goals of environmental quality which take account of the uses we wish to make of particular environmental resources, and of the feasibility and cost of achieving these goals. For example, tighter water quality standards apply to watercourses which provide the domestic water supply than to those which are used for industrial purposes. This is simply recognition that it would be both costly and a waste of resources to apply uniform standards regardless of use.

6. This does not of course mean that we cannot move progressively towards higher goals, taking advantage of technical advances. But it does mean that we should give top priority to tackling the worst problems vigorously, and to restoring as much of the environment as possible to acceptable quality on the best achievable timescale. Furthermore our strategy should be forward looking and should allow industry to anticipate and plan for necessary investment and changes.

Making Use of New Technology

7. Pollution control, like pollution itself, has an inevitable cost. We must always try to compare the costs of pollution control with the benefits, even though some of these – such as the preservation of natural beauty – are impossible to value in strictly financial terms. Sometimes we cannot achieve the controls we would like because the technology is not available; at other times it is disproportionately expensive for the benefits obtained. For example, flue gas desulphurisation is a proven technology for removing sulphur dioxide from power station plumes, but the Industrial Air Pollution Inspectorate have not required its installation, because at a capital cost of some £150 million for each major power station, they have regarded it as too expensive an imposition to constitute 'best practicable means'. This is an illustration of why the Government cannot necessarily accept international calls for the installation of the 'best available technology' for pollution

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control, regardless of the balance of costs and benefits. But we stand committed to the use of the best technology that is justifiable and economically feasible.

8. Moreover, the Government attach great importance to technical developments that lower the cost of pollution control (and may help Britain to win orders in an expanding export market). That is one reason why we particularly welcomed the new Pollution Abatement Technology Award Scheme (PATAS) which is now well into its second year. This is a splendid example of active co-operation between the promoting bodies (the Royal Society of Arts, the Confederation of British Industry and the Department of the Environment) and the sponsors, the ERAS (Environmental Risk Analysis System) Foundation, in pursuit of a very worthwhile objective.

9. The winners in 1983 included enterprising proposals for the treatment of effluent from pectin manufacture, for using earthworms to turn agricultural and industrial wastes into compost and animal feed, for disposing of sludge from water treatment tanks, and for solidifying and collecting oil spills without damage to aquatic life. But there are many other examples of progress outside the competition, including the recent announcement by the Central Electricity Generating Board of their intention to develop and test a low nitrogen oxides burner at a working power station. A number of other examples of clean technologies for power stations are set out in paragraph 68 below.

Interactions Between Different Sectors of the Environment

10. The Royal Commission has rightly pointed out that different sectors of the environment can sometimes exchange pollutants between them. The problems of 'acid rain' are a classical example involving transfers between air, soil and water. The Government accept the concept of the 'best practicable environmental option' (BPEO) which the Royal Commission first enunciated in its Fifth Report. It is clearly right that wastes should be disposed of in the way which causes least harm to the environment as a whole, taking account of possible interactions as well as economic, geographic, technical and other relevant factors. Such decisions require very complex analysis but it is important that our waste disposal policies should stand the test of the BPEO principle.

The International Dimension

11. More and more pollution controls are now agreed at the international level. This has happened in part because some problems that now cause concern (such as 'acid rain' and the health of the marine environment) result from the discharge by many nations of substances that affect the shared resources of air, sea, or international rivers. It has also happened because pollution is often caused by mobile sources such as cars, aircraft and ships, or from the use of chemicals that are traded widely.

12. We have taken an active part in the development of the European

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Community's environmental policy and this has made an important contribution to improving the quality of our environment on common lines agreed with our closest trading partners. But many international problems go wider than the Community; that is why we participate actively in international bodies such as the United Nations Environment Programme, the United Nations Economic Commission for Europe and the Organisation for Economic Co-operation and Development in seeking ways and means to prevent or control pollution on a global or regional basis. International co-operation in research has also broadened, as was shown at the London Economic Summit in June 1984 when it was agreed, as a result of an initiative by the United Kingdom, that the Summit Working Group on Technology, Growth and Employment should report by the end of the year on the areas of pollution control where further research is needed.

The Need for Information

13. The Government accept that the public cannot be expected to have confidence in the actions taken by pollution control authorities unless the reasoning behind those actions is explicit. As the Royal Commission recognises, both industry and pollution control authorities have shown welcome readiness to provide more information to the public about their activities in recent years, and we are keen to pursue their recommendation that this should be put on a more systematic basis. These issues are considered at greater length in Part II of this response.

Presentation of UK Environmental Policies

14. However sound our concepts and our actions, we shall not make the best use of available resources unless we get our organisational structure right; nor shall we convince our audience at home and abroad unless we present our policies and achievements effectively. In Part II of this response, we describe some practical steps to strengthen the Department of the Environment and other Government Departments concerned with pollution control (see paragraph 73 below).

15. We accept the Royal Commission's criticism that the United Kingdom has not always presented its policies to best effect, particularly in Europe. At home, our achievements have sometimes been underrated and our policies misunderstood; in European discussions, positions have sometimes become polarised, so that it has appeared that we are pulling in a different direction from the rest of Europe when in fact we are trying to achieve broadly the same objectives.

16. We are determined to change this. In Europe we are pressing hard for agreement to achieve the use of unleaded petrol by new cars before 1990; and there is increasing recognition that our approach to some of the difficult water pollution issues which face us is legitimate and effective. The Department of the Environment's recent booklet 'Environmental Protection'[4] has helped to put the record straight about the United Kingdom's very real environmental achievements of the past two or three decades.

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PART II

THE GOVERNMENT'S RESPONSE TO THE ROYAL COMMISSION'S RECOMMENDATIONS

CONFIDENTIALITY

17. The need to inform the public about the state of the environment is one of the general principles set out in Part I of this response. As the Royal Commission recognises, there has been a trend towards greater openness in environmental matters in recent years. Accident reports have been made generally available. The reports on the contamination of beaches at Sellafield in November 1983 are a recent example of prompt publication by the Government on a matter of public concern. Government research reports are, with few exceptions, made available (although cost considerations may preclude formal publication), and pollution control authorities have been disclosing a steadily increasing flow of information in the interests of keeping the public informed about the state of the environment. Industry has played its part in this by readily agreeing to the publication of much information which, as the legislation stands, could be regarded as confidential.

18. The Government believe that this trend should now be accelerated. The environment is a common resource. Secrecy about the way in which one part of society is using that resource can cause concern amongst others who may fear that it is being abused. In a debate in the House of Commons on 12 March 1984, Mr. William Waldegrave, Parliamentary Under Secretary of State at the Department of the Environment, said that "the presumption must be in favour of openness in environmental matters"[7]. Action now needs to be taken to give effect to this in relation to every sector of the environment in a way which is readily comprehensible to the public at large. Obscure procedures can be as effective as secrecy in fuelling fear.

A guiding principle behind all legislative and administrative controls relating to environmental pollution should be a presumption in favour of unrestricted access for the public to information which the pollution control authorities obtain or receive by virtue of their statutory powers, with provision for secrecy only in those circumstances where a genuine case for it can be substantiated (7.8).

The information to be recorded in the public registers under Part II of the Control of Pollution Act 1974 should be prescribed in accordance with our general principles and in a way which minimises the cost of providing public access (7.9).

Section 28(7) of the Health and Safety at Work etc. Act 1974 should be amended to remove the obsolete and unnecessary bar on disclosure of information by the Industrial Air Pollution Inspectorate and other pollution control authorities (7.10).

Consideration should be given to establishing public registers of information relating to the control of atmospheric pollution from both registered and non-registered works, containing details of agreed 'best practicable means' and the results of emission tests and environmental monitoring by both the Industrial Air Pollution Inspectorate and local authorities (7.11).

The powers of local authorities under sections 79 and 80 of the

7. Official Report, 12 March 1984, Col. 128.

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19. There are, however, cogent arguments against total openness. The Royal Commission itself recognises that there are good reasons for non-disclosure in certain situations – for instance, in cases of national security or genuine commercial confidentiality. Moreover, the Government believe that it would be wrong to introduce a new uniform system which either:

i. entailed an unacceptable increase in costs for either industry or pollution control authorities; or

ii. required cumbersome bureaucratic procedures – for example to obtain exemption from disclosure on agreed grounds.

20. Our response to the Royal Commission's recommendations on this important subject therefore divides them into two categories: those that we can accept immediately, and those on which we believe that further work is necessary in order to establish the most workable and cost-effective regime, bearing in mind the considerations mentioned in the previous paragraph.

21. The Government accept:

i. the thrust of the Royal Commission's overriding recommendation that there should be "a presumption in favour of unrestricted access for the public to information which the pollution control authorities obtain or receive by virtue of their statutory powers";

ii. the Royal Commission's proposals concerning public registers under Part II of the Control of Pollution Act 1974. Regulations are to be made to allow public access to information on discharges to water and the consent conditions attached to them, and on measures taken by Water Authorities (in Scotland, River Purification Boards) to monitor and ensure satisfactory compliance with those conditions. (There is already provision in Northern Ireland for inspection of records on discharges to water.) The Act provides for free inspection of the registers at all reasonable times and for copies of entries to be obtainable for a reasonable charge;

Control of Pollution Act 1974 to obtain and publish information about atmospheric pollution should be made mandatory and brought into line with Part II of the Act: this should include restoration of the Secretary of State's role as final arbiter on what constitutes a trade secret (7.12).

As an interim measure, positive encouragement should from now on be given to local authorities to make use of their powers under sections 79 and 80 of the Control of Pollution Act 1974 and to establish local consultative committees. Local authorities should also be encouraged to make available regular information on their pollution control activities generally, for example in the form of annual reports by environmental health departments (7.13).

In accordance with our general recommendation, the introduction to the environment of all potentially polluting substances, manufactured products and wastes should in general be subject to a uniform system of controls, with provision for public information modelled on Part II of the Control of Pollution Act 1974. Administrative and statutory requirements for public information, including those relating to pesticides, radioactive waste, new chemicals and transfrontier hazardous waste shipments should therefore be brought progressively on to a common footing (7.14).

Where a Minister or other pollution control authority has the power to withhold information in the public interest, the power should be exercised only when this is essential on grounds of national security (7.15).

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iii. the recommendation that the law should be changed to facilitate the disclosure of information obtained by the Industrial Air Pollution Inspectorate about emissions to the atmosphere. This conclusion was announced by Mr. John Gummer, then Minister of State at the Department of Employment, on 9 July 1984[8]. He added that the Health and Safety Commission were continuing their examination of the possibilities for more extensive disclosure of information about other aspects of health and safety matters of interest to the public, having due regard to the considerations of commercial confidentiality. They hope to publish a consultative document early in 1985.

In cases where protection of trade secrets is agreed to be justified, the position should be reviewed regularly and Ministerial certificates withdrawn or varied at the earliest opportunity (7.16).

22. The Government recognise the force of the Royal Commission's other recommendations on confidentiality, and particularly the attraction of establishing a uniform regime. But we believe that further work is necessary, in conjunction with the bodies which will be most directly affected by any revised arrangements, on the details of such a regime. We are therefore establishing a working party, consisting of representatives of pollution control authorities and relevant Government Departments. Their remit will be to report to the Government within 12 months on the measures necessary to implement, in the most practicable way, a regime consistent with the Royal Commission's principal recommendation (see paragraph 21(i) above). The working party will be asked to pay particular attention to the costs of these measures, and the need to avoid red tape.

23. Our overall objective in this area is to satisfy as fully as possible the public's legitimate demand for information without imposing a regime which could undermine the proper relationship between the pollution control authorities and industry.

8. Official Report, 9 July 1984, Col. 397.

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WATER QUALITY AROUND THE COAST

24. As the Royal Commission observes, there has been a substantial reduction in estuarine pollution in the United Kingdom in the last decade and the general quality of waters around the coastline gives grounds for encouragement. The river quality surveys for England and Wales, the most recent of which was undertaken in 1980, show a marked reduction in the length of tidal rivers classified as poor or grossly polluted (from 820 kilometres in 1970 to 440 kilometres in 1980). Much is also being done to promote further improvement. There is continuing attention to industrial estuaries such as the Tyne and Tees and the programme to clean up the Mersey basin will require a very substantial long-term commitment of public resources. Water Authority programmes are also making substantial provision – some £100 million over the next four years in England alone – for capital works to improve sewage discharges to coastal waters, in particular by suitably designed and sited long sea outfalls which, as the Royal Commission indicates, represent a satisfactory means of sewage disposal.

25. Nevertheless, in the Government's view, the Royal Commission is right to conclude that water quality in some estuaries is not yet satisfactory and that many bathing waters and beaches still suffer from an undesirable degree of sewage contamination. The Government therefore welcome, and for the most part accept, the Royal Commission's recommendations which will help to ensure that current progress is sustained and where possible extended. In particular, the Government have told Water Authorities that in the public expenditure plans for 1985/86 they intend that there should be a significant increase in their investment, thus reversing the previous trend. An important purpose is to provide more resources for a faster rate of improvement in the aquatic environment generally, including estuarine and coastal waters on a priority basis.

The Control of Pollution Act 1974

26. The Royal Commission expressed concern that the implementation of Part II of the Control

The Government should reaffirm the commitment to

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of Pollution Act 1974 in Great Britain should not be further delayed and that it should as soon as possible make the real contribution to water quality for which it was enacted.

complete the legal implementation of Part II of the Control of Pollution Act 1974 by July 1986; furthermore, the Government and the water authorities should agree a timetable for the review of all categories of discharge initially covered by exemption orders or by deemed consents, and should agree a planned programme of improvement geared to stated water quality objectives (7.39).

27. In line with the Government's earlier commitments, about half of the provisions of Part II have now been brought into force, covering in particular the extension of the control system and the introduction of public involvement. Early in 1985 the wider enforcement powers will be made available to Water Authorities and regulations will be laid to provide for the establishment of public registers of discharge consents. Implementation of the few remaining provisions will then be subject to public consultation in the usual way.

28. The Government share the Royal Commission's wish that the Act should quickly make an effective contribution to the improvement of water quality, in particular by providing a framework for improvement programmes geared to stated water quality objectives. Accordingly the Government are now consulting widely on a timetable for withdrawal of the exemptions granted, as a transitional measure, to existing discharges. This programme will give Water Authorities and industry a planning framework for the regular review and upgrading of existing discharges and a means of ordering priorities and monitoring progress. We intend to bring existing discharges within the scope of the Act in the order of their importance for the environment, starting with discharges to estuarine and coastal waters. We will also use the powers in the Act for the regular and systematic review of those consents granted to Water Authorities under previous legislation for their own discharges to inland waters, to ensure that standards are maintained and, where appropriate, improved.

Quality of Estuarine and Coastal Waters

29. Improving the quality of estuarine waters and coastal waters (and bathing beaches) is expensive. The sewerage system in Weymouth and Portland,

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the major part of which was completed in May 1984, included 2.7 kilometres of sea outfall and a sewage screening plant; it will also involve the construction of about 20 kilometres of interceptor sewers to cut off flows of sewage from entering the sea untreated and to convey them to the screening plant. The project has so far cost £25 million. Current major schemes at Shieldhall on the Clyde, at Langbaurgh on the North East coast, and at Hastings and Bexhill are expected to cost £59 million, £14 million and £8 million respectively. These formidable costs are largely borne locally. They have to compete in the regional scheme of priorities: and all Water Authorities have other pressing claims on their investment funds – including the maintenance and renewal of sewers and water mains, the improvement of water supplies (for example, to reduce plumbosolvency or nitrate content), or the extension of services to cater for new development.

30. Our principal concern must therefore be to get priorities right in the short term and to ensure that they are consistent with coherent longer-term objectives. We believe that a continuation of current investment levels over the next 15 to 20 years should allow improvement of all estuaries (other than the Mersey for which separate plans exist) to fair quality (class B) and most to good quality (class A) and the elimination of those unsatisfactory sewage discharges to coastal waters which affect areas of environmental or amenity significance. Given the planned increase in expenditure by Water Authorities noted in paragraph 25 above, it is expected that in some areas, at least, the rate of progress will be improved. The Government will also discuss with Water Authorities and other interested bodies the setting and publication of objectives and standards for estuaries and coastal waters; the methods of measuring and reviewing progress towards these objectives; and the priority to be accorded to them as against other general and regional Water Authority programmes.

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Discharges of Sewage

31. The Government agree that the elimination of discharges of crude sewage is an important long-term objective, but are doubtful of the advantages of setting a target date for elimination of all such discharges. The priority must be clear and realistic programmes to deal with those unsatisfactory outlets which affect areas of amenity or environmental significance.

After discussion with the water industry the Government should set a date by which the recommendation of the Working Party on Sewage Disposal relating to discharges of crude sewage is to be implemented in full (7.45).

Bathing Waters

32. A European Community Directive (76/160/EEC) requires Member States to ensure that waters which are identified as bathing waters should consistently achieve certain prescribed standards of bacteriological quality by 1986 save where derogations have been agreed. The Government expect to comply with this Directive in respect of all the 27 bathing waters identified. However, the Government recognise the criticism that many bathing waters were not identified and accept that in many cases there is no satisfactory information available on their quality.

The Government, in consultation with the water authorities and district councils, should reconsider the selection criteria and investigate with the Commission of the European Communities the possibility of identifying additional bathing waters (7.47).

33. It is the Government's view that coastal bathing waters (defined for example by sites with lifeguards or at which changing huts, car parks or toilets are provided on a substantial scale for bathers) should be monitored. We will soon open discussions with the authorities concerned on monitoring these waters and publishing the results. This should enable authorities to identify those areas where remedial action is required, although it is expected that, in many cases, water quality will already meet the standards of the Directive.

Sampling and Analysis of Coliform Bacteria

34. We note with interest the Royal Commission's recommendation on coliform bacteria and will discuss it with the Commission of the European Communities. But the technical difficulties of improving on the sampling and analysis regime for coliform bacteria as it is at present laid down in the Directive should not be underestimated.

The Government should initiate negotiations with the Commission of the European Communities with a view to introducing a better sampling and analysis regime for coliform bacteria (7.48).

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MARPOL Convention

35. The Government ratified the MARPOL Convention[9] and its 1978 Protocol on 22 May 1980, and was one of the first maritime administrations to do so. But like many other maritime nations it has not yet ratified the optional Annexes III, IV and V. International discussions on the content and ratification of Annex V (on litter) are taking place within the International Maritime Organisation and also interdepartmentally. The local authority associations and a sample of local authorities have been consulted on the costs of clearing marine litter from beaches.

The Government should ratify the MARPOL Convention and draw the attention of shipowners to the provisions of Annex V (7.50).

Marine Litter

36. The Government consider public education on the problem of marine litter to be a matter of importance. Through our annual grant to the Keep Britain Tidy Group, we support the Group's Marine Litter Research Programme. The Group's litter abatement activities are aimed at educating and persuading the public not to create litter, and lay particular emphasis on education in schools and the involvement of all sectors of the community (local authorities, voluntary groups, industry and commerce) in changing attitudes by raising environmental awareness. The need for proper waste management in all situations is central to their overall message. We have also consistently stressed to the shipping industry the need to avoid the disposal of garbage at sea and have recommended voluntary compliance with the provisions of Annex V of MARPOL, pending its entry into force. Shipowners have responded positively, and passenger ferry operators have standing orders banning the disposal of garbage into the sea. Particular problems exist for cruise liners when large numbers of the minor ports visited around the world have inadequate reception facilities. It is also difficult in existing liners to provide enough space on board for storage and new garbage processing machinery.

The Government, in association with the Keep Britain Tidy Group and the local authority associations, should give high priority to improving public education on the problem of marine litter and to encourage appropriate authorities, for example at marinas and on ferries, to provide adequate means for the disposal of shipboard litter (7.51).

9. 1973 International Convention for the Prevention of Pollution from Ships.

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Colliery Spoil on Beaches

37. We note the Royal Commission's view that tipping of colliery waste off the Durham coastline should be brought to an end. Spoil from collieries along the North East coast has been deposited on a number of beaches and at sea for many years.

An early date, at least within five years, should now be set by which all tipping of colliery waste on the foreshore of the United Kingdom must come to an end, and plans should be put in hand for remedial action on the affected beaches. Such remedial action should not entail any extension of existing offshore dumping operations (7.52).

38. The Government recognise the strength of local feeling about these practices and the need to bring such tipping to an end as soon as practicable. As we made clear in our response[10] to the Commission on Energy and the Environment (CENE) report on Coal and the Environment[11] the costs of doing so in the immediate future are prohibitive. We are nonetheless determined to continue the search for a cost-effective and environmentally acceptable solution within a realistic period. The experimental pipeline at Horden Colliery will help to determine the optimum distance out to sea for disposal and the extent of any adverse effects on the marine environment. This is fully in accord with the spirit of the 'best practicable environmental option' approach endorsed by the Royal Commission. The Royal Commission itself has recommended against the extension of existing offshore dumping operations as a possible alternative. We accepted this in our response to the CENE report. We have now agreed with the National Coal Board that the amount of spoil reaching the marine environment over the next five years will be progressively reduced. It has also been agreed that remedial measures should be put in hand wherever practicable on the beaches most affected. A number of specific measures designed to contain the area of beach affected by spoil disposal and to ensure that such areas are cleared regularly of any unsightly debris are to be put in hand by the Board as a first step towards full restoration. These include the diversion of spoil to an inland quarry, a study of the feasibility of a containing bund, and a periodic sweep of the beaches.

10. Coal and the Environment. Cmnd 8877; HMSO, 1983.
11. Commission on Energy and the Environment. Coal and the Environment. HMSO, 1981.

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Shellfish Waters

39. We accept the Royal Commission's conclusion that there should be a more positive approach to the European Community Shellfish Waters Directive (79/923/EEC). The progressive implementation of Part II of the Control of Pollution Act 1974 will provide enhanced powers for the Water Authorities in this area, and we shall keep other means of advancing the purposes of the Directive under review.

The responsible authorities (the Water Authorities in England and Wales, and the Scottish Development Department) should make positive use of the enhanced powers in Part II of the Control of Pollution Act 1974 to achieve a programme of continually expanding improvement, to the benefit of both the environment and human health, and in the interests of successful commercial shellfish farming (7.53).

The North Sea Conference

40. We played a full and constructive part in the preparation of the international Conference on the North Sea. As the country with the longest North Sea coastline, the United Kingdom has a strong interest in preserving its health, and the Government welcome the Royal Commission's view that there is at present no substantial threat to the North Sea. Because of its assimilative capacities and the low costs involved, the North Sea represents the best practicable environmental option for the disposal of certain types of waste under controlled conditions. Nevertheless we recognise the strength of international concern about the possible effects of inputs to the North Sea, and during the preparation for the Conference we contributed substantially to a thorough international scientific assessment by experts from all the participating countries of the environmental state of the North Sea to identify areas of concern.

The Government should respond positively to the initiatives of the Federal German Government and the Commission of the European Communities concerning the North Sea, and should promote international sponsorship of a review by an independent group of experts (7.56).

41. This 'quality status' assessment, embodied in a report to the Conference, confirmed our view that the health of the North Sea is generally good, and that damage is limited to certain coastal and estuarine regions, mainly on the Continental side. The findings of the quality status report support the results of studies by the International Council for the Exploration of the Sea (ICES) which, through co-operative international programmes,

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keeps the effects of man's activities on the North Sea under constant review.

The Irish Sea

42. Monitoring and research studies on the Irish Sea have been carried out by ICES, and more recently by the Joint Monitoring Group of the Oslo and Paris Commissions. Reports on these studies have been published and ICES have announced their intention to carry out a further analysis of the Irish Sea in the near future. In addition the UK Environment Departments have sponsored or carried out research and monitoring to determine the effects of discharges into the Irish Sea, and the results have been published. Reports on radioactive waste discharges appear annually, and a Government report on the effects of sewage sludge disposal is expected to be available early in 1985.

Further studies should be undertaken on the inputs and effects of contaminants to the Irish Sea (7.57).

43. But we recognise that there is public concern about the area and welcome the seminar on the environmental health of the Irish Sea which was recently held by the Royal Society of Arts, in which Government officials participated. Possible follow-up measures are under consideration.

The Position in Scotland

44. The preceding paragraphs apply to the whole of the United Kingdom. While for some matters, such as the essential features of the implementation of the Control of Pollution Act 1974, this is appropriate, there are as regards other matters important differences in respect of Scotland; the most significant of these are summarised here. Prior to the implementation of Part II of the Control of Pollution Act 1974, the extent of control by River Purification Boards of estuaries and tidal waters was much more extensive in Scotland than elsewhere. For this reason, much has already been done to deal with some of the more serious unsatisfactory discharges; in the last 10 years some £200 million has been spent by the Sewerage Authorities concerned. Future plans envisage a further £130 million being spent by

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these authorities and there has been, in addition, significant expenditure by industry. When all these plans are fully implemented only relatively small and local areas of pollution will remain to be dealt with. In line with this investment the most recent survey data disclose that with the exception of local 'black spots' estuarine conditions in Scotland are generally good and that only 25 kilometres of the tidal reaches of rivers are still grossly polluted. While no bathing waters were designated in Scotland, nonetheless River Purification Boards have, where it was considered necessary, monitored bona fide bathing beaches according to the main criteria in the Bathing Waters Directive and have published the results. The application of the Shellfish Waters Directive has been assisted by the extensive control available to River Purification Boards; designations represent a fair proportion of current shell fisheries and there has been little pressure for further action.

AIR QUALITY

Straw Burning

45. We recognise the problems which can arise as a result of careless burning of straw and stubble and have taken action to strengthen the model on which local authority bylaws in England and Wales are based. The model is broader in scope than its predecessor and reflects the Royal Commission's view that more reliable methods of control over straw and stubble burning are required if the practice is not to become a recurring problem.

The Government should announce the introduction of a legislative ban on straw burning on stubble fields to take effect in five years' time; the legislation should be introduced now and come into effect on the prescribed date without the need for subsequent statutory instruments or commencement orders (7.6).

46. Experience of the 1984 harvest is that observance of the bylaws and of the code of practice issued by the National Farmers' Union (NFU) has markedly reduced problems, but we shall continue to monitor the situation in future and will implement more stringent controls if necessary. Meanwhile, we do not consider that prohibition of straw and stubble burning would be a practicable means of reducing the risks associated with the practice so long as there remain some 5 to 6

The Ministry of Agriculture, Fisheries and Food and the Agricultural and Food Research Council should give greater priority to research and development on alternative uses of straw in the immediate future (7.7).

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million tonnes annually of straw for which no alternative outlets are available.

47. There are major snags which will have to be overcome with all currently known alternatives, and we are not confident that quick or easy solutions will emerge. We agree with the Royal Commission that priority should be given to research and development of alternative uses of straw and we are currently spending some £2 million a year in this area. In this connection we welcome the NFU's proposal to set up a computerised register of techniques for, and problems associated with, ploughing in straw rather than burning it.

48. In Scotland, a much lower proportion of the crop is burnt since most can be used for livestock purposes. Model bylaws for straw burning have not been issued in Scotland.

Long-Term Monitoring

49. We recognise the importance of long-term air monitoring in providing a basis for the development of air pollution control policies. As the Royal Commission accepts, there are difficulties in designing networks appropriate to the purpose, because of the costs involved: it is all too easy to spend large sums acquiring data that are of little real value. Monitoring arrangements are reviewed periodically and steps have already been taken to increase from six to nine the number of primary sites on which the most important pollutants are measured nationally. These sites provide our input to the international monitoring system known as EMEP (the Co-operative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe), concerned with the acid deposition problem, which now operates under the Long Range Transboundary Air Pollution Convention; they will also form the nucleus of the network being established (in response to the report of the Acid Rain Review Group[12]) to measure acid deposition in the UK.

The Department of the Environment should give greater recognition to the importance of long-term monitoring as a basis for action to improve air quality (7.60).

12. Acid Deposition in the United Kingdom. Report of the United Kingdom Review Group on Acid Rain, Warren Spring Laboratory, 1983.

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The Rural Monitoring Network

50. We accept that insufficient attention has been given to the acquisition of data on sulphur dioxide in rural areas; and we agree that monitoring should be better tailored, subject to the availability of funds, to provide general support for research on the effects of air pollutants. Rural monitoring is accordingly under review and the Royal Commission's advice will be taken into account as decisions on it are made.

Further consideration should be given to the size of the baseline rural network (7.61).

Nitrogen Oxides and Ozone Monitoring

51. We are conscious that baseline monitoring of nitrogen oxides (NO_x) and ozone is at a minimal, and barely acceptable, level. In view of the increasing significance of NO_x and ozone in relation to current environmental concerns, we have plans for extending monitoring of these to the nine primary national air-monitoring sites referred to above. Determination of the ideal number of sites is always difficult, and the Tenth Report does not make clear the Royal Commission's reasons for proposing 25 sites for NO_x and 10 for ozone. We shall, however, consider the provision further in the light of the Royal Commission's recommendation. It should be noted that monitoring in connection with a proposed European Community Directive on air quality standards for Nitrogen Dioxide would call for essentially separate arrangements; monitoring for this purpose would need to be conducted at urban sites.

The number of sites in the baseline networks for the monitoring of nitrogen oxides and ozone should be increased substantially (7.63).

Measuring Methodology

52. Improvement in measuring methodology is a continuous process, and we fully accept the recommendation that improved techniques for the measurement of sulphur dioxide, smoke and the wet and dry deposition of other substances should be actively pursued at the Warren Spring Laboratory and elsewhere.

The Warren Spring Laboratory, in liaison with the Department of the Environment and with research scientists who use the data, should continue to improve methodology for the measurement of sulphur dioxide, smoke and the wet and dry deposition of other substances (7.62).

Indoor Air Pollution – Radon

53. We agree that priority should be given to devising remedial measures for existing houses

Priority should be given to devising effective remedial

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where radon concentrations are relatively high, and the Building Research Establishment and the National Radiological Protection Board (NRPB) are already undertaking research into this. In addition the NRPB are undertaking research to enable areas and houses at risk to be more readily identified. It is, however, clear that only a very small minority of existing houses are affected – depending on the underlying geology. The simplest step which can be taken to reduce radon concentrations is to improve ventilation, and there are other good reasons for doing this (see paragraph 59 below), but this may conflict with the need to improve the efficient use of energy in housing. Ventilation of buildings is a complex matter and the Government are accordingly undertaking research to determine the degree of ventilation which will provide the best balance between the needs of indoor air quality and those of energy efficiency.

measures for those existing houses where radon concentrations are such as to cause anxiety, and to devising preventive measures for new houses (7.66).

. . . remedial action should be undertaken on existing dwellings, initially on those where the annual effective dose equivalent exceeds 25 mSv (7.67).

A design limit should be applied to new dwellings. On the basis of information available to us we favour an annual effective dose equivalent limit of 5 mSv, but a decision on the value should await the assessment of recommendations in the forthcoming report on controllable sources of radiation by the International Commission on Radiological Protection (7.68).

54. Objectives for radiation exposure in the UK are set by reference to the recommendations of the International Commission on Radiological Protection (ICRP); the NRPB advise the Government on the interpretation of ICRP recommendations and on any relevant European Community legislation. The figures recommended by the Royal Commission differ in some respects from the ICRP's recent recommendations on limiting exposures from natural sources of radiation, especially in relation to the circumstances in which particular action is justified. Advice on this will be forthcoming from the NRPB. When this advice is received, we shall consider, in the light of the results of the research mentioned above, what remedial measures are available and necessary for new and existing houses.

Publicity on the Dangers of Asbestos

55. We have published advice on the dangers of asbestos in the form of a detailed booklet[13] intended for local authority officers and the

The Department of the Environment should pay particular attention to ensuring, through suitable

13. Asbestos Materials in Buildings. HMSO, 1983.

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building professions, and a free leaflet [14] intended for the general public on asbestos in housing. Both publications are being revised and updated. It is intended to make the booklet more comprehensive and to give more specific advice on the practical steps involved in identifying and dealing with asbestos materials.

publicity, that advice on asbestos reaches the important target of smaller builders and do-it-yourself enthusiasts (7.70).

56. At the request of the Association of Metropolitan Authorities a joint central and local government working party on asbestos in buildings has been set up. The working party will co-ordinate the collection of information on asbestos in buildings and exchange information on the technical problems of dealing with these materials. Any additional guidance which the working party may produce on asbestos in buildings will be published.

57. The Health and Safety Commission's Construction Industry Advisory Committee has also established a working party to consider ways of improving health and safety standards for processes involving contact with asbestos in the construction industry; the working party is currently developing guidance and information.

58. These initiatives should ensure that up to date advice continues to be available. This will be widely disseminated, to the building industry through existing channels such as the specialist journals and trade associations, and to the public through local authorities, Citizens Advice Bureaux and do-it-yourself journals.

Publicity on Ventilation

59. In our advice on energy efficiency[15] and the avoidance of condensation[16], we already warn householders not to seal their homes too tightly. Much of this advice stresses the need for additional ventilation when flueless heaters are used.

In parallel with the continuing research into indoor air quality and the role of ventilation in relation to building design, energy conservation and health, central and local

14. Asbestos in Housing. Department of the Environment, 1983.
15. A Guide to Home Heating Costs. Department of Energy, 1984.
16. Condensation and Mould Growth in your Home. Department of the Environment, 1982.

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Existing ventilation requirements in building regulations already embrace these matters and will be reconsidered in current and forthcoming revisions.

government, the Health Education Council and the Scottish Health Education Group should actively promote greater public awareness of the importance of maintaining reasonable ventilation in the home, particularly where flueless heating appliances are in use (7.72).

Unleaded Petrol and Carcinogens

60. We share the Royal Commission's concern that we should not solve one health problem at the expense of introducing another. Subject to the constraints of the present state of knowledge on the nature of the emissions and their carcinogenic potential, the Government will continue to bear this important point in mind. Vehicle emissions are a matter for international discussion and agreement, notably within the European Community. In the recently published draft Directive on unleaded petrol, the European Commission has proposed a limit of 5 per cent on the benzene content of fuel.

The route taken to implement the Government's stated intention to introduce unleaded petrol should not involve an increase in the total amount of carcinogenic hydrocarbons emitted from the vehicle population (7.76).

Diesel Engines and Smoke

61. We agree that there is considerable scope for improving the construction standard governing smoke emissions from diesel-engined vehicles. But in the Government's view the scope for increasing effective enforcement against offending vehicles is much more limited.

The Department of Transport should institute urgently a programme of research into the use of electronic engine control systems and other forms of engine technology to make the quality of emissions from diesel-engined vehicles less dependent on standards of engine maintenance (7.77).

62. The Department of Transport has already commissioned an assessment of possible technical improvements in the design of diesel engines so as to reduce smoke emissions and to maintain low emission levels during service. This assessment will enable the Department to work for more stringent limits in discussions of the expert working group under the United Nations Economic Commission for Europe (ECE). The Department will argue for the lowest limits that can be achieved by modern technology, taking into account the need to conserve fuel and to contain operating costs. Lower limits that may be agreed

Greater urgency should be given to the development of more expeditious and objective methods for the measurement of smoke from diesel-engined vehicles both at testing stations and at roadsides (7.78).

Legislative provisions should be made to enable local authorities to take proceedings directly against operators of vehicles emitting excessive smoke (7.79).

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in the ECE and incorporated in an ECE regulation, will need to be adopted by the European Community, as an amendment to the current Directive, before UK regulations can be changed. The Department will undertake further assessment work which, in the light of international discussions, appears desirable to support the UK position.

63. As regards vehicles in use, the Department of Transport checks heavy goods vehicles at their annual test and mounts such roadside checks as it can with available resources. In the Department's view, visual assessment by an experienced vehicle examiner is both expeditious and reasonably objective, at least as regards identifying the worst offenders. Although smoke meters exist, we doubt if an instrumented procedure would give significantly better results. Relatively few vehicles fail the annual test but, as the Royal Commission observes, this is not surprising given the opportunity to prepare for the test – and a low failure rate could be expected whatever the method of assessment. For these reasons, the Department has not given priority to the development of an objective test method for smoke, though some work is in hand at the Transport and Road Research and Warren Spring Laboratories.

64. Although smoke from vehicles is an environmental nuisance, and thus may appear a suitable subject for local authority environmental health officers, official examination of heavy goods vehicles is most effectively done by examiners competent to check all aspects of the vehicle – including, where operators' premises are visited, arrangements for vehicle maintenance. The Department of Transport's vehicle examiners, organised on a regional basis, are best placed to do this and, in the Government's view, the involvement of local authority environmental health officers would not be cost-effective.

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Secondary Pollutants

65. We welcome the Royal Commission's discussion of this issue and agree that more needs to be known about the extent and effects of secondary pollutants. Within the Government, the Department of the Environment is the co-ordinating body for research in this field, and the Government's current annual expenditure on relevant research is £600,000. A number of bodies – including the Atomic Energy Research Establishment, Harwell; Imperial College, London; Warren Spring Laboratory; the Institute of Terrestrial Ecology; and the University of Lancaster – are carrying out relevant projects under contract to the Department.

The Research Councils should encourage continued research on secondary pollutants, particularly the photochemical oxidants, in the United Kingdom (7.81).

Acid Deposition Research

66. We wholly accept the Royal Commission's view that acid deposition is one of the most important pollution issues of the present time and that high priority should be given to research in this field. In the UK and other industrialised countries there is increasing public anxiety about the possible links between emissions from combustion processes, acid deposition and environmental damage. Recognising the urgent need for improved scientific understanding in these areas to provide the basis for policy decision-making, we have already substantially increased our support for research. The Department of the Environment's current expenditure on air pollution research is about £2.5 million a year, of which about one half is directly concerned with the acid deposition problem. With the addition of other Government research expenditure – notably by the Scottish Office, the Welsh Office, the Meteorological Office, the Forestry Commission and the Natural Environment Research Council – and of other expenditure by public bodies (notably the Central Electricity Generating Board, total UK expenditure on relevant research is currently running at some £5 million a year.

. . . high priority should be given to research on acid deposition, in particular on the causes and effects, on the interactions with other pollutants, and on remedial action (7.86).

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Pilot Schemes for Sulphur Dioxide Abatement

67. Since the Royal Commission's report was published, the House of Commons Select Committee on the Environment in their report on Acid Rain[17], have made a number of recommendations on emissions. The Government's response to the Select Committee's report[18] sets out the Government's views in full. It makes clear that the Government is not prepared to commit the country to expensive methods of abating sulphur dioxide emissions when the benefits are so uncertain. Nonetheless, the Government intend to reduce emissions of both sulphur dioxide and nitrogen oxides, aiming at a 30 per cent reduction from 1980 levels by the end of the 1990s.

The Central Electricity Generating Board should introduce on a pilot basis, over the next five years, certain of the sulphur dioxide abatement options that are already available (7.87).

68. We accept the Royal Commission's view that it is prudent for the Central Electricity Generating Board (CEGB) to gain technical experience of the options available for sulphur dioxide (SO_2) abatement. This does not, however, necessarily require a programme of pilot schemes as such. Flue gas desulphurisation (FGD) is, for example, as the Royal Commission itself has pointed out, already a well developed and widely used technology. The CEGB have already carried out detailed engineering assessment on a number of the available processes. As for other emission control technologies, an extensive programme of work is being carried out. The CEGB and the National Coal Board are collaborating on extending the use of existing coal preparation technologies and the development in the longer term of new coal cleaning techniques. The Boards are also embarking on a joint programme at a cost of £25 million on pressurised fluid bed (PFB) combustion at the large experimental facility at Grimethorpe. Together with the Department of Energy, they are jointly sponsoring a design study of a generating plant based on a PFB combustor which offers

17. Acid Rain. Fourth Report from the Environment Committee, Session 1983–84. HMSO, 1984.
18. Acid Rain. The Government's reply to the Fourth Report from the Environment Committee. Cmnd 9397; HMSO, 1984.

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the advantages of reduced SO_2 and NO_x emissions as well as improved efficiency. A similar study, sponsored by the Department of Energy, the CEGB and the British Gas Corporation, is examining combined cycle generation based on the slagging gasifier. Other relevant work includes an investigation by the CEGB of special designs for low-NO_x burners and the installation of a pilot plant to study the removal of hydrogen chloride from power station flue gas – the high chlorine content of UK coal could cause operating difficulties with FGD plants. These emission control programmes, which will cost some £40 million, should enable the generating authorities and their suppliers to keep abreast of available abatement options.

Gases Affecting Stratospheric Ozone

69. The Royal Commission recognises that over the last few years scientific concern about stratospheric ozone depletion has decreased but that uncertainties remain about the effects of chlorofluorocarbons (CFCs) and of other substances and that research must continue. We share these views and in the circumstances do not consider that a basis yet exists for the initiatives recommended by the Royal Commission although we shall continue to study the evidence as it emerges in this and other countries. We have already accepted that restriction of the use of CFCs is a wise precaution, and steps have been taken in the European Community to establish a voluntary agreement with industry that the use of CFCs in aerosols be reduced by 30 per cent. In practice a reduction of 35 per cent has been achieved. We regard this as an appropriate response to the problem in the light of current knowledge.

Industry should be encouraged to restrict the use of gases (including chlorofluorocarbons) which may deplete stratospheric ozone to purposes for which no acceptable substitutes exist (7.89).

The Government should take the initiative through the European Community, the Organisation for Economic Co-operation and Development, and other international agencies, to encourage a worldwide policy to restrict the use of gases (including chlorofluorocarbons) which may deplete stratospheric ozone to essential purposes (7.90).

70. In a wider context, the United Kingdom was instrumental in establishing a Co-ordinating Committee on the Ozone Layer under the United Nations Environment Programme, which brings together most of the scientific experience and knowledge of the problem which is available in the world. We are also participating fully in

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negotiations to prepare a Convention on Protection of the Ozone Layer which will provide a framework within which action on ozone depleting substances can be taken rapidly if this is justified by the evidence.

Carbon Dioxide

71. We accept that it is essential to continue to investigate the implications of the slow build-up of carbon dioxide (CO_2) which is occurring in the atmosphere.

All necessary steps should be taken to ensure that there is the best chance of an early resolution of the uncertainties surrounding the effects of increasing concentrations of carbon dioxide in the atmosphere (7.92).

72. Concern over this increased carbon dioxide concentration arises from the possible consequential effect on climate. There are still major uncertainties about this, and the Meteorological Office, with its acknowledged expertise in climatic modelling, is contributing to their solution, with substantial support from the European Commission, and as part of a major international effort co-ordinated by the World Climate Programme. Work being undertaken under the Natural Environment Research Council is also contributing to the development of understanding of the carbon dioxide balance, both historic and prospective. We are also participating in the work of the Organisation for Economic Co-operation and Development Environment Committee which includes the development of environmentally favourable energy strategies.

STRUCTURE

73. The Government have taken a number of steps to improve the existing mechanisms for environmental policy co-ordination and development in the United Kingdom. For example, the resources of the Department of the Environment's Central Directorate of Environmental Protection have been increased in key areas, for example, to strengthen the scientific section of the division dealing with air pollution and to enable work on the review of air pollution legislation to be taken forward; the Radiochemical Inspectorate has been strengthened and a

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northern office established; and the Ministry of Agriculture, Fisheries and Food have recently set up an Environment Co-ordination Unit with the specific objective of providing a strategic framework for co-ordinating that Ministry's work on environmental issues, including pollution, conservation and rural affairs.

74. These measures supplement the arrangements recently introduced on the research side: the initiative announced at the London Summit (see paragraph 12 above), and the new arrangement whereby the Royal Commission is invited to offer advice on the Department of the Environment's environmental protection research programmes before they are submitted to Ministers for approval.

75. We shall continue to keep our organisational arrangements under review. Our specific responses to the Royal Commission's recommendations are set out below.

Advisory Body on BPEO

76. The Confederation of British Industry (CBI) first put forward their proposal for a high-level advisory body on cross-media environmental questions in 1976 following the Royal Commission's Fifth Report. The proposal has been considered again.

The Confederation of British Industry's proposal for a high-level advisory body to consider cross-media pollution issues should be examined in detail by the Department of the Environment (7.26).

77. We fully accept the CBI's view that BPEO questions (see paragraph 10 above) can arise at two distinct levels: individual local cases (for example, in relation to emissions from a particular works) and strategic national issues (for example, whether dumping at sea should be retained as a waste disposal option).

78. The CBI proposal is intended to address issues in the latter category. Our view is that the BPEO principle is already encompassed in the Government's approach to major environmental considerations, and that where necessary we would continue to seek advice from experts on

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specific issues rather than consult an additional standing advisory committee. We do not therefore propose to establish the kind of high-level body proposed by the CBI.

Advice on Transport of Nuclear Materials

79. The Department of Transport is consulting the Health and Safety Commission about the desirability of establishing an independent source of advice on the transport of nuclear materials. We are not yet ready to announce conclusions but we accept that a valuable contribution could be made by members of the Radioactive Waste Management Advisory Committee and members of the Advisory Committee on the Safety of Nuclear Installations.

The terms of reference of either the Radioactive Waste Management Advisory Committee or the Advisory Committee on the Safety of Nuclear Installations should be extended to cover the transport of nuclear materials (7.28).

Radioactive Waste Management Advisory Committee

80. We have for some time recognised the need for local government experience on the Radioactive Waste Management Advisory Committee, and on 3 May 1984, Mr. Patrick Jenkin, Secretary of State for the Environment, announced the appointment to the Committee of the Scientific Adviser and County Analyst to Somerset County Council.

The Radioactive Waste Management Advisory Committee's membership should be enlarged to include people with local government experience (7.29).

Nuclear Industry Radioactive Waste Executive

81. The Nuclear Industry Radioactive Waste Executive (NIREX) is an executive body set up and financed by the nuclear and electricity generating industries. Although we had not thought that it would be appropriate for independent members to serve on NIREX, in view of the Royal Commission's recommendation we are now giving further consideration to the possibility in consultation with NIREX.

The board of the Nuclear Industry Radioactive Waste Executive should be enlarged to include independent members, appointed by the Secretary of State for the Environment, who are able to speak from a knowledge of wider public concern and to contribute suitable scientific and environmental expertise (7.30).

The Commission on Energy and the Environment

82. We have considered whether to take out of abeyance the Commission on Energy and the Environment, in the light of the availability of advice on the environmental implications of energy development from existing bodies. We do

The Commission on Energy and the Environment should be reconstituted, but with wider terms of reference in accordance with the original recommendation in the Royal

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not see a sufficient case for doing this. Should the future need for work on energy and the environment justify it, we would envisage enhancing the role of the Royal Commission itself. We have accordingly decided that the Commission on Energy and the Environment should now be abolished.

Commission's Sixth Report (7.98).

OTHER MATTERS

Pollution Paper No. 9

83. We agree that Pollution Paper No 9 (Pollution Control in Great Britain – How It Works[19]) has proved a valuable reference document, and accept that it must be kept up to date if that value is not to be diminished. A new version will be published in 1985, the need for updating will be reviewed annually thereafter, and further editions will be published as necessary.

The Department of the Environment should produce a revised edition of Pollution Paper 9 as soon as possible and keep it regularly updated (7.17).

Pooling Resources

84. There can be no doubt that the pooling of manpower and equipment for pollution control will often be the most efficient use of resources. The Department of Transport's Marine Pollution Control Unit already operates on this principle, and the Government commend the example set by the Boroughs of Cleveland Pollution Control Group and referred to in the Royal Commission's report. Arrangements of this kind are best determined at the local level, and pollution panels generally could provide a valuable forum for settling them. We shall consider what further encouragement may be given to local authorities in this area.

Greater encouragement should be given to local authorities to pool resources in the use of manpower and equipment for pollution control (7.25).

Alternative Energy Scenarios

85. The Government accept that the UK's energy strategy needs to give full weight to the environmental impact of the use of different fuels. Nuclear energy is already the most highly developed alternative to energy derived from fossil

An appraisal of alternative energy scenarios, in preparation for a possible progressive shift away from fossil fuels, should be given the highest priority, and the

19. Pollution Control in Great Britain: How it Works (2nd Edition), Pollution Paper No. 9; HMSO, 1978.

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fuels, and its further growth offers one of the most effective ways of reducing air pollution associated with electricity generation. Renewable sources of energy also have a contribution to make, but the immediate task here is to establish the technical and economic feasibility of exploitation of the available technologies on a commercial scale. As part of a continuing programme the Department of Energy spent £11 million on such work in 1983–84.

Government should regularly inform Parliament and the public of its current assessment of future energy requirements and their sources (7.95)

86. Current energy projections, published in 1982[20], include scenarios which suggest that the share of UK energy demand supplied by nuclear and renewable energies in 2010 might be in excess of 30 per cent. An important complementary approach is energy conservation; the Government already have a substantial programme to encourage the most efficient use of energy. The Government's assessment of future energy needs will continue to be available to Parliament and the public.

Pollution from Technologically Advanced Industries

87. In co-operation with the Department of Health and Social Security, the Office of Population, Censuses and Surveys, the Industrial Air Pollution Inspectorate and other appropriate bodies the Department of the Environment will be initiating studies into the potential for pollution from technologically advanced industries. Work will be aimed at improving the precision of the methods available for detecting any changes in health patterns around sources of substances which are known to have health effects at high concentrations. In the field of bioengineering the Department will be considering how best to guard against any environmental damage that may arise from the adoption and application of this new technology. The Department is already working closely with the Advisory Committee on Genetic Manipulation to produce guidelines covering the

The Department of the Environment should give high priority to further research on the potentially polluting effects of electronics, bioengineering and other technologically advanced industries (7.101).

20. The Energy Projections 1982; annexed to the Department of Energy's Proof of Evidence for the Sizewell B Public Inquiry.

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possible hazards arising from the release to the environment of modified organisms. It is important that the Government take effective action if public confidence in this important new technology is to be preserved.

Pollution Control in Enterprise Zones

88. There is no question of relaxing pollution control requirements in Enterprise Zones. The legislation governing pollution control makes no distinction between Enterprise Zones and other areas.

Local and other statutory authorities should continue to apply the same pollution control standards in Enterprise Zones as elsewhere (7.102).

Subsidies for Pollution Control Equipment

89. A study of the availability of subsidies for investment in pollution control equipment in certain Member States has been completed for the Department of the Environment by Environmental Resources Limited[21]. This research was carried out in response to the House of Lords Select Committee on the European Communities' Report on the Polluter Pays Principle[22]. Following a review of pollution charging systems in Member States, which is currently in hand, the results of both studies will be fully evaluated to assess whether or not such instruments should be incorporated into UK pollution control policy. In this context, we draw attention to the adoption, at the European Council of Environment Ministers in June 1984, of the Regulation on Action by the Community Relating to the Environment. Amongst other things, this Regulation enables the Community to make grants towards projects for the demonstration of new clean technologies in certain industries and the development of new techniques for measuring and monitoring certain pollutants.

The Government should undertake a study of the operation of subsidies for pollution control equipment and for clean technology in other Member States and should evaluate the consequences of the incorporation of similar arrangements in United Kingdom environmental policy (7.105).

21. Pollution Control Subsidies for Industry in Europe. Prepared for the Department of the Environment, 1984.
22. The Polluter Pays Principle. House of Lords Select Committee on the European Communities, Session 1982–83, Tenth Report; HMSO, 1983.

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Priority and Resources

90. We agree with the Royal Commission that continuity and anticipation are essential components of forward planning. During the last decade environmental protection policy in the United Kingdom has moved significantly away from short-term reaction to obvious and immediate pollution problems towards a greater concentration on more subtle problems whose prevention requires long-term forward planning. This response sets out elsewhere our proposals for increased research and monitoring in specific areas, and for a more strategic approach to research generally. It also describes our longer-term proposals for improving water quality, particularly in areas where the Royal Commission have made criticisms. Our policy on the removal of lead from petrol, on an agreed timetable and in consultation with our European Community colleagues and the motor manufacturers, is an example of our general approach. We recognise the force of the Royal Commission's recommendation and we shall endeavour to extend it throughout all aspects of our environmental policy.

Pollution control policy, and environmental policy generally, should be accorded the priority and resources adequate for their integration in the national decision-making process, so that their potential benefits can be realised to the full and at least cost (7.109).

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This is the twenty second in a series of official papers published for the Department of the Environment on various aspects of pollution.

Titles published to date are;

1. The Monitoring of the Environment in the United Kingdom (1974)
2. Lead in the Environment and its Significance to Man (1974)
3. The Non-Agricultural Uses of Pesticides in Great Britain (1974)
4. Controlling Pollution (1975)
5. Chlorofluorocarbons and their Effect on Stratospheric Ozone (1976)
6. The Separation of Oil from Water for North Sea Oil Operations (1976)
7. Effects of Airborne Sulphur Compounds on Forests and Freshwaters (1976)
8. Accidental Oil Pollution of the Sea (1976)
9. Pollution Control in Great Britain: How it Works (2nd Ed)(1978)
10. Environmental Mercury and Man (1976)
11. Environmental Standards (1977)
12. Lead in Drinking Water (1977)
13. Tripartite Agreement on Stratospheric Monitoring between France, the United Kingdom and the United States of America: Joint Annual Report 1976–77 (1977)
14. Lead Pollution in Birmingham (1978)
15. Chlorofluorocarbons and their Effect on Stratospheric Ozone. Second Report (1979)
16. The United Kingdom Environment 1979: Progress of Pollution Control (1979)
17. Cadmium in the Environment and its Significance to Man (1980)
18. Air Pollution Control (1982)
19. Lead in the Environment (1983)
20. Oil Pollution of the Sea (1983)
21. Agriculture and Pollution (1983)

This series is complemented by a series of Pollution Reports which provide information on pollution matters which may be of more limited public interest or which is not yet in a form which would merit publication as a Pollution Paper.

The titles already published in the Pollution Report series are:

1. The Monitoring of Environmental Pollution: Report of the first UK/USSR Monitoring Symposium (DOE, 1977)
2. Monitoring the Marine Environment of the United Kingdom: The First Report of the Marine Pollution Monitoring Management Group 1975–1976 (DOE, 1977)
3. Elaboration of the scientific bases of monitoring the quality of surface water by hydrobiological indicators: Report of the First UK/USSR Seminar held at Valdai, USSR, 12–14 July 1976 (DOE, 1978)
4. Digest of Environmental Pollution Statistics No. 1 (HMSO, 1978)

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5. Glossary of Air Pollution Terms: Air Pollution Monitoring Management Group (HMSO, 1979)
6. Monitoring the Marine Environment: The Way Ahead: The Second Report of the Marine Pollution Monitoring Management Group 1977–1978 (DOE, 1979)
7. Digest of Environmental Pollution Statistics No. 2 (HMSO, 1980)
8. Elaboration of the scientific bases for monitoring the quality of surface water by hydrobiological indicators: Report of the Second UK/USSR Seminar held at Windermere, UK, 24–26 April 1979 (DOE, 1980)
9. Digest of Environmental Pollution and Water Statistics No. 3 (HMSO, 1980)
10. European Community Screening Programme for Lead: United Kingdom Results for 1979–1980 (DOE, 1981)
11. The Glasgow Duplicate Diet Study, 1979/80. A joint survey for the Department of the Environment and the Ministry of Agriculture, Fisheries and Food (DOE, 1981)
12. Department of the Environment Sponsored Research on Radioactive Waste: Progress Report 1980 (DOE, 1981)
13. Digest of Environmental Pollution and Water Statistics No. 4 (HMSO, 1982)
14. Monitoring the Marine Environment: Into the Eighties: The Third Report of the Marine Pollution Monitoring Management Group 1979–1981 (DOE, 1982)
15. Blood-Lead Concentrations in Pre-school Children in Birmingham: A report of the Steering Committee on Environmental Lead in Birmingham (DOE, 1982)
16. Digest of Environmental Pollution and Water Statistics No. 5 (HMSO, 1983)
17. State-of-the-Art Review of Radioactivity Monitoring Programmes in the UK: A Report by the Radioactivity Monitoring Management Group (DOE, 1983)
18. European Community Screening Programme for Lead: United Kingdom Results for 1981 (DOE, 1983)
19. Digest of Environmental Protection and Water Statistics No. 6 (HMSO, 1984)

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